COMPLETE LISTING OF ALL CLAIMS, WITH MARKINGS AND STATUS IDENTIFIERS
(Currently amended claims showing deletions ~~by strikethrough~~ and additions by underlining)

1 (currently amended): A biodegradable polymer bearing non-polymerizable lactone ring wherein the polymer is a ~~selected from the group consisting of~~ polyester~~, polyorthoester, polyphosphoester, polycarbonates, polyanhydrides and polyphophazenes and copolymers and blends thereof~~.

2 (original): A polymer bearing non-polymerizable lactone ring according to claim 1 wherein the non-polymerizable lactone ring is within the polymer chain or the non-polymerizable lactone ring is bonded to one or both ends of the polymer chain.

3 (canceled)

4 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claim 2, wherein the polymer is a polyorthoester.

5 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claim 2, wherein the polymer is polyphosphoester.

6 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claim 2, wherein the polymer is a polycarbonate.

7 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claim 2, wherein the polymer is a polyanhydride.

8 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claim 2, wherein the polymer is a polyphosphazene.

9 (original): A polymer bearing non-polymerizable lactone ring according to claim ~~3~~ 2, wherein the polyester is selected from the group consisting of polymers, copolymers or blends of l-lactide, dl-lactide, d-lactide, lactic acid, ε-caprolactone,

hydroxycaproic acid, ρ-dioxanone, trimethylene carbonate, 1,5-dioxepan-2-one, 1-4 dioxepan-2-one, glycolide, glycolic acid, ethylene glycol, propylene glycol, valerolactone, hydroxyvaleric acid, and butanediol.

10 (original): A polymer bearing non-polymerizable lactone ring according to claim 9, wherein the polyester is selected from the group consisting of l-lactide, dl-lactide, glycolide, and polyethylene glycol and the non-polymerizable lactone ring is selected from the group consisting of hydroxybutyrolactone, erythrynolactone, isopropylidene, ribonolactone, isocitric acid lactone, mannarolactone, sacharrodilactone and glucarodilactone.

11 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claim 4, wherein the polyorthoester is obtained from a diketene acetal and a dihydroxy non-polymerizable lactone ring bearing prepolymer.

12 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claims 11 wherein the dihydroxy non-polymerizable lactone ring bearing prepolymer comprises a polyester selected from the group consisting of polymers, copolymers or blends of l-lactide, dl-lactide, lactic acid, ε-caprolactone, hydroxycaproic acid, ρ-dioxanone, trimethylene carbonate, 1,5-dioxepan-2-one, 1-4 dioxepan-2-one, glycolide, glycolic acid, ethylene glycol, propylene glycol valerolactone, hydroxyvaleric acid, and butanediol.

13 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claim 5, wherein the polyphosphoester is obtained from (C_1-C_{18})alkylphosphodichloridates, cycloalkylphosphodichloridates or arylphosphodichloridates and a dihydroxy non-polymerizable lactone ring bearing polymer.

14 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claim 13 wherein the dihydroxy non-

polymerizable lactone ring bearing prepolymer contains a polyester selected from the group consisting of polymers, copolymers or blends of l-lactide, dl-lactide, lactic acid, ε-caprolactone, hydroxycaproic acid, ρ-dioxanone, trimethylene carbonate, 1,5-dioxepan-2-one, 1-4 dioxepan-2-one, glycolide, glycolic acid, ethylene glycol, propylene glycol valerolactone, hydroxyvaleric acid, and butanediol.

15 (withdrawn): A polymer bearing non-polymerizable lactone ring according to claim 8, wherein the polyphosphazene is obtained from poly(dichloro)phophazene and amino butyrolactone.

16 (original): A polymer bearing a non-polymerizable lactone ring according to claim 10, wherein the non-polymerizable lactone ring has been ring opened to its corresponding hydroxycarboxylic acid alkali metal salt.

17 (original): A polymer bearing non-polymerizable lactone ring according to claim 16, wherein the hydroxycarboxylic acid alkali metal salt is within the polymer chain.

18 (withdrawn): A complex comprising a polymer bearing non-polymerizable lactone ring according to claim 1, ionically complexed with a therapeutic agent containing at least one cationic group.

19 (withdrawn): A complex containing a polymer bearing non-polymerizable lactone ring according to claim 17, ionically complexed with a therapeutic agent containing at least one cationic group.

20 (withdrawn): A complex according to claim 19, wherein the therapeutic agent is selected from the group consisting of LHRH, somatostatin, bombesin/GRP, calcitonin, bradykinins, galanin, MSH, GRF, amylin, tachykinin, secretin, PTH, CGRP, neuromedin, pTHRP, glucagon, neurotensin, ACTH, PYY, PYY, and TSH, or an analogue or fragment thereof.

21 (withdrawn): A complex according to claim 20, wherein the therapeutic agent is a somatostatin analogue selected from the group consisting of H-β-D-Nal-Cys-Tyr-D-Trp-Lys-Val-Cys-Thr-NH_2, where the two Cys are bonded by a disulfide bond, N-hydroxyethylpiperazinyl-acetyl-D-Phe-Cys-Tyr-D-Trp-Lys-Abu-Cys-Thr-NH_2 where the two Cys are bonded by a disulfide bond or N-hydroxyethylpiperazinyl-ethylsulfonyl-Phe-Cys-Tyr-D-Trp-Lys-Abu-Cys-Thr-NH_2 where the two Cys are bonded by a disulfide bond.

22 (withdrawn): A complex according to claim 20, wherein the therapeutic agent is an LHRH analogue of the formula ρ-Glu-His-Trp-Ser-Tyr-D-Trp-Leu-Arg-Pro-Gly-NH_2.

23 (withdrawn): A sustained release composition comprising a complex according to claim 21 wherein the composition is in the form of microparticles, microspheres or rods.

24 (withdrawn): A sustained release composition comprising a complex according to claim 22 wherein the composition is in the form of microparticles, microspheres or rods.

25 (withdrawn): A pharmaceutical composition comprising a sustained release composition according to claim 23 having an effective amount of the therapeutic agent and a pharmaceutically-acceptable carrier.

26 (withdrawn): A pharmaceutical composition comprising a sustained release composition according to claim 24 having an effective amount of the therapeutic agent and a pharmaceutically-acceptable carrier.

27 (withdrawn): A method of treating or preventing a disease or a condition, which comprises administering a pharmaceutical composition according to claim 25 to a patient in need thereof, wherein said disease or condition is a disease or

condition that can be treated by the therapeutic agent in the pharmaceutical composition.

28 (withdrawn): A method of treating or preventing a disease or a condition, which comprises administering a pharmaceutical composition according to claim 26 to a patient in need thereof, wherein said disease or condition is a disease of condition that can be treated by the therapeutic agent in the pharmaceutical composition.

29 (withdrawn): A method of administering a pharmaceutical composition according to claim 25 to a recipient, wherein said pharmaceutical composition is administered orally, through the nasal passage, through the pulmonary passage or parenterally.

30 (withdrawn): A method of administering a pharmaceutical composition according to claim 26 to a recipient, wherein said pharmaceutical composition is administered orally, through the nasal passage, through the pulmonary passage or parenterally.

--31 (new): A polymer bearing non-polymerizable lactone ring wherein the polymer is a polyester and the lactone ring is a five-membered lactone ring.

32 (new): A polymer bearing non-polymerizable lactone ring wherein the polymer is a polyester and the lactone ring is a six-membered lactone ring.--

REMARKS

This amendment is responsive to the Office Action mailed June 24, 2003. Original Claims 1-30 are under examination in the present action. Claims 1-3 stand rejected. Claims 4-8, 11-15 and 18-30 have been withdrawn from consideration. Claims 9, 10, 16 and 17 are objected to for being dependent on a rejected base claim. New claims 31 and 32 have been added reciting respectively that the claimed lactone ring is a five-membered or a six-membered ring. Applicant asserts that new claims 31 and 32 do not introduce new matter and that basis for said claims is found at page 2, line 20 of the specification.

1. Applicant acknowledges the Examiner's continued restriction requirement.

2-3. Claims 1-3 stand rejected under 35 U.S.C. §102(b) as being anticipated by European Patent No. 0 440 108 A2 issued to Isozaki *et al.* (hereinafter referred to as "Isozaki").

Isozaki describes a method for curing a resin by utilizing an intermolecular or intramolecular cross-linking reaction, wherein the cross-linking reaction is a ring opening polymerization reaction between lactone structures and/or a ring opening addition reaction between a lactone structure and an active hydrogen-containing functional group (*See* Isozaki at page 5, lines 48-51). The resins discovered by Isozaki are utilized in paints, inks, adhesives, tackifiers and molded articles. (*See*

Isozaki at page 8, lines 33-34). Without conceding the correctness of this rejection and in an effort solely to advance the prosecution of the instant application, the Applicant has amended claim 1 to recite the limitation that the claimed polymers are biodegradable[1]. Basis for this amendment can be found at page 1, line 1 of the specification. Applicant submits that amended claim 1 is not anticipated by Isozaki since there is no suggestion by Isozaki that any of the resins discussed would be biodegradable, and indeed, this would seem a very unlikely property for a resin formulated for the aforementioned uses. Accordingly, it is submitted that amended claims 1 and 2 are novel over the disclosure of Isozaki.

Even without the present amendment to claim 1, Applicant, respectfully, asserts that the reasoning employed by the Examiner with respect to Isozaki is incorrect. It is well-settled tenet of U.S. patent practice that a Patentee "is free to be his own lexicographer." *Autogiro Co. of America v. United States*, 384 F.2d 391, 397, 155 USPQ 697, 702 (Ct. Cl 1967). Further under U.S. patent practice, the extent of protection conferred by a U.S. patent shall be determined by the terms of the claims and the specification shall be used to interpret the claims.

[1] Applicant has further amended claim 1 to limit the selected polymer to a polyester in compliance with the final restriction requirement. By making this amendment Applicant does not concede the correctness of the Examiner's final decision. The amendment of claim necessitated the cancellation of claim 3, without waiver or prejudice, due to redundancy. Neither of these amendments have any bearing on Applicant's arguments with respect to Isozaki.

"Claims are to be construed in light of the specification and both are to be read with a view to ascertaining the invention." *United States v. Adams*, 383 U.S. 39, 48-49, 178 USPQ 479, 482 (1966).

In the present case, the functional term "non-polymerizable lactone ring" would be interpreted by the skilled artisan in the light of the passage found at page 2, lines 19-31 of the instant specification. Applicant directs the Examiner's attention to that portion of the aforementioned passage wherein it is disclosed that the lactones with which the present application is concerned "are considered non-polymerizable under the normal conditions of polymerization described by the present invention." These conditions are set out in detail in the specification from page 8, line 22 to page 12, line 11. It would be immediately apparent to the skilled reader that such conditions do not include the vinyl polymerization conditions found at page 6, lines 33-56 of Isozaki.

Moreover, contrary to the assertions of the Examiner, the Isozaki lactone rings, even those present in the uncured starting material, <u>are</u> polymerizable since the Isozaki lactone rings ***must be able to take part in the cross-linking reaction***. If any of the lactone ring structures disclosed by Isozaki were non-polymerizable, as defined by the specification of the instant

application, such structures would not be able to meet the objections of Isozaki.

More particularly, the present specification discloses that five-membered and certain six-membered lactone rings are non-polymerizable. *See* instant application specification page 2, lines 19-29. Specific examples of lactones having such characteristics (i.e., hydroxybutyrolactone, erythrynolactone, isopropylidene ribonolactone, isocitric acid lactone, mannarolactone, sacharrodilactone and glucarodilactone) are recited. *See*, inter alia, instant application, page 3, lines 30-32 and page 5, lines 19-21. The active hydrogen present on each lactone is used to initiate the polymerization of other lactones, without affecting the ring. The non-polymerized ring can subsequently be ring-opened to its corresponding hydroxycarboxylic acid alkali metal salt that, in turn, is ionically complexed with a therapeutic agent.

The method disclosed by Isozaki, contrary to the instant application, requires use of polymers having **polymerizable** lactone rings, i.e., a lactone ring readily capable of undergoing polymerization under standard conditions. Applicant directs the Examiner's attention to Isozaki, at page 2, lines 12-15, which states:

> ...according to this invention, there is provided a method for curing resin by utilizing an intermolecular or intramolecular cross-linking reaction of a resin, characterized in that the cross-linking reaction is a

ring opening polymerization reaction between lactone structures.

Isozaki further states that the lactone ring contained on the resin "is opened at the ester linkage site … and then attacks the other lactone structure to form a polyester structure (ring opening polymerization), as shown in … reaction scheme A." *See*, Isozaki at page 2, lines 23-25 and reaction schemes A(1) to A(3). Accordingly, the method taught by Isozaki cannot be practiced without use of a polymer containing a polymerizable lactone ring. *See* claim 1 if Isozaki.

Isozaki asserts that "the lactone structure is preferably a 4- to 9- membered cyclic functional group." Isozaki does not, however, disclose any examples of non-polymerizable, 5-membered or 6-membered ring lactones incorporated into polymers of the type defined in the claims of the instant application. As discussed in the specification of the instant application, 5-membered ring lactones and certain 6-membered ring lactones are thermodynamically stable so as to be non-polymerizable. *See* review by Jones, D.H. et al., in Ring Opening Polymerization, edited by K.J. Ivin and T. Saegusa, Elsevier Applied Science Publishers, N.Y. As discussed in the instant application, the purpose for using a polymer bearing a non-polymerizable lactone ring is to be able to open the lactone ring to "its corresponding hydroxycarboxyllic acid alkali metal salt," *See* the instant

application at page 5, lines 3-4, which in turn, can be advantageously "ionically complexed with a therapeutic agent containing at least one cationic group," *See* instant application at page 6, lines 2-3. If the teachings of Isozaki were applied to the disclosure of the present application, as suggested by the Examiner, the lactone rings of the Isozaki polymers would polymerize with each other preventing the formation of the aforementioned desirable corresponding hydroxycarboxylic acid alkali metal salt. The foregoing clearly illustrates the incompatibility of Isozaki and the instant application.

The instant application further teaches that an active hydrogen is desirably present on the selected polymer bearing a 5-membered ring lactone to "initiate the polymerization of other lactones, without affecting the five membered ring lactone." *See* instant application page 2, lines 24-26. The preferred lactones disclosed, i.e., hydroxybutyrolactone, erythrynolactone, isopropylidene ribonolactone, isocitric acid lactone, mannarolactone, sacharrodilactone and glucarodilactone, all possess this feature. The preferred lactones disclosed by Isozaki do not.

Applicant respectfully submits that the Examiner's allegation that Isozaki's disclosure of an "uncured starting material… to which a non-polymerizable lactone ring is attached," is equivalent to the claimed polymer bearing non-polymerizable

lactone ring, is unsubstantiated. Applicant unambiguously defines a "non-polymerizable lactone ring" as including "five membered ring lactones and certain six membered ring lactones... [that are] thermodynamically stable and are considered non-polymerizable under the normal conditions of polymerization." *See* instant application page 2, lines 20-24. Further, the claims of the instant application are drawn to polymers containing non-polymerizable lactone rings. Applicant respectfully contends that the Examiner's contention that an uncured lactone ring-containing polymer that has not yet undergone polymerization, but readily undergoes polymerization under normal conditions, is "non-polymerizable," is inconsistent with the aforementioned definition and claims. As such, the polymers described by Isozaki do not anticipate the claimed subject matter of the instant application. Based on the foregoing, Applicant respectfully requests that the Examiner reconsider and withdraw her rejection of claims 1 and 2 under 35 U.S.C. 1029b) as being anticipate by European Patent No. 0 440 108 A2 in the name of Isozaki.

Applicant is grateful for the Examiner's allowance of claims 9-10 and 16-17 if such claims were rewritten in independent form including all of the limitations of the base claim and any intervening claims. Based on the above argument, the Applicant respectfully declines at this time to amend these claims as

suggested by the Examiner. Applicant requests, however, that if the Examiner finds the above argument to not be persuasive, that she allow the Applicant the opportunity to amend said claims as suggested.

In summary, it is believed that the instant application is now in an allowable condition and such allowance is earnestly solicited.

The Examiner is invited to telephone the Applicant's representative at the telephone number indicated below to facilitate the prosecution of this application. The Commissioner is hereby authorized to charge any additional fees deemed necessary to Deposit Account 50-0590.

Respectfully submitted,

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